

**VIRGINIA
STANDARDS OF LEARNING ASSESSMENTS**

Spring 2003 Released Test

**END OF COURSE
GEOMETRY**

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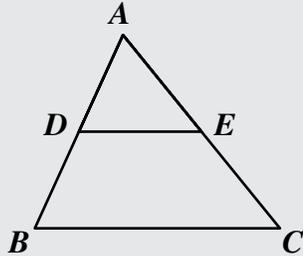
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Geometry

DIRECTIONS

Read and solve each question.

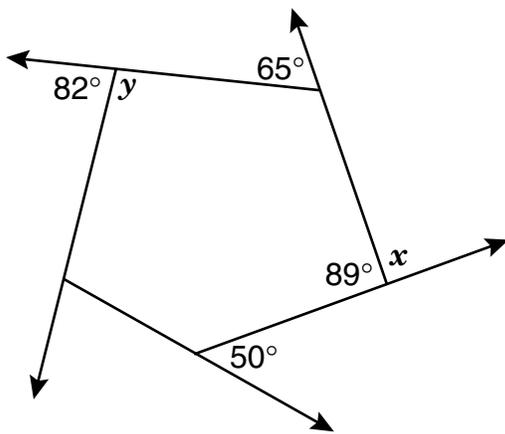
SAMPLE



If $\triangle ABC$ is similar to $\triangle ADE$, then $AB : AD = ? : AE$. Which replaces the “?” to make the statement true?

- A AC
- B AE
- C DE
- D BC

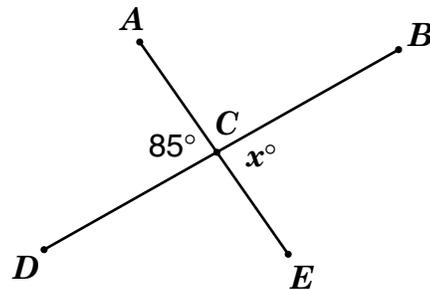
1



What are the values of x , and y ?

- A $x = 91^\circ, y = 98^\circ$
- B $x = 91^\circ, y = 108^\circ$
- C $x = 101^\circ, y = 98^\circ$
- D $x = 101^\circ, y = 108^\circ$

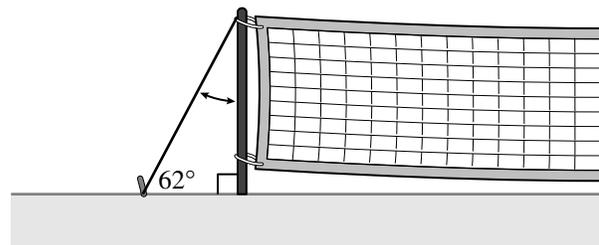
- 2 Given: $B, C,$ and D are collinear;
 $m\angle ACD = 85^\circ$



What value of x will ensure that $A, C,$ and E are also collinear?

- F 75
- G 85
- H 95
- J 105

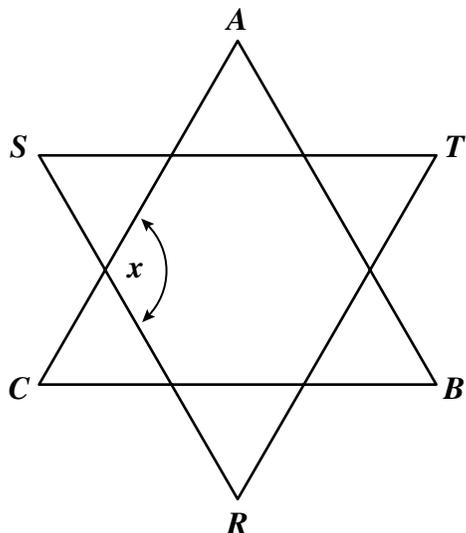
- 3 A guy wire for a pole for a tennis net makes an angle of 62° with the ground.



What is the measure of the angle between the wire and the pole?

- A 28°
- B 62°
- C 90°
- D 180°

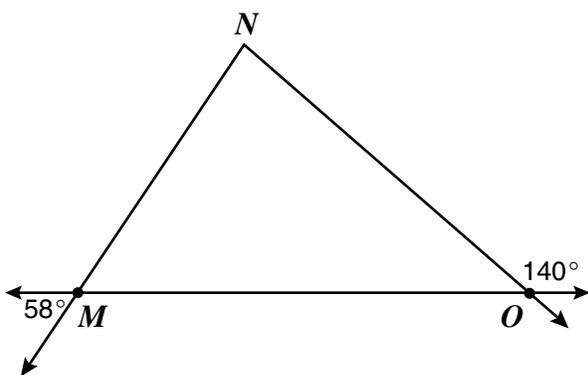
4



In the diagram, $\triangle ABC$ and $\triangle RST$ are congruent equilateral triangles with corresponding sides parallel. What is the value of x ?

- F 90°
- G 120°
- H 135°
- J 144°

5 The measures of some angles are given in this figure.



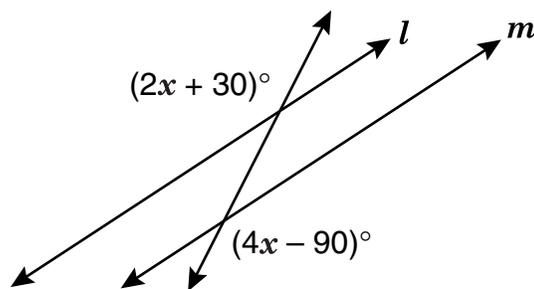
What is the measure of $\angle N$?

- A 40°
- B 58°
- C 82°
- D 122°

6 Line m contains points $(1, -3)$ and $(2, 2)$. Which of the following pairs of points define a line parallel to line m ?

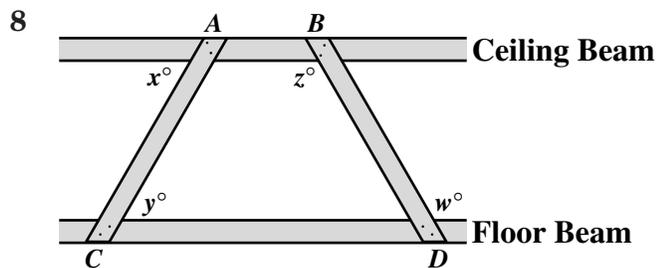
- F $(0, 0)$ and $(-1, 1)$
- G $(0, 0)$ and $(1, 5)$
- H $(1, 1)$ and $(6, 2)$
- J $(-4, 0)$ and $(5, 5)$

7



What value for x will show that lines l and m are parallel?

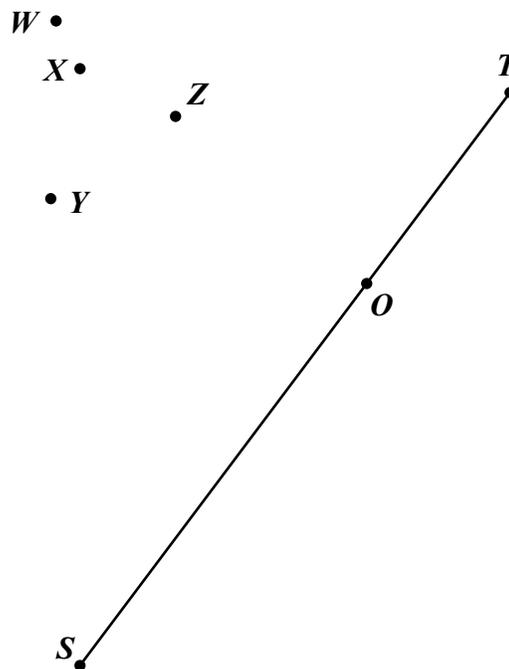
- A 25
- B 30
- C 40
- D 60



A construction engineer needs to make sure a ceiling beam is parallel to its corresponding floor beam. Using the drawing as a guide, which pair of measurements is sufficient to show the beams are parallel?

- F $x = z$
- G $y = w$
- H $x = y$
- J $y = z$

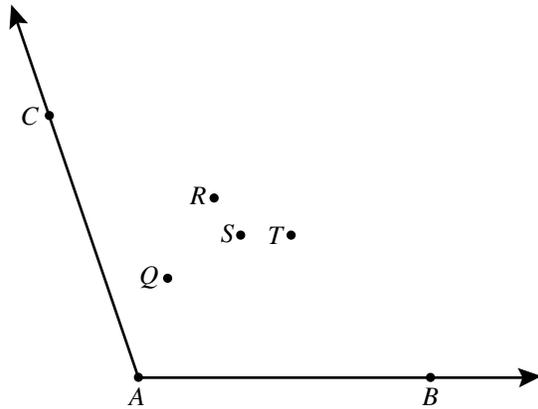
9 Use your compass and straightedge to construct a line that is perpendicular to \overleftrightarrow{ST} and passes through point O .



Which other point lies on this perpendicular?

- A W
- B X
- C Y
- D Z

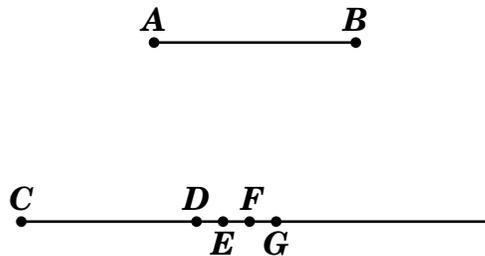
- 10 Use a compass, straightedge, and the drawing below to answer the question.



Which point lies on the line that bisects $\angle CAB$?

- F Q
- G R
- H S
- J T

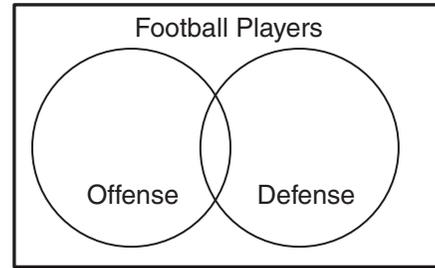
- 11 Use your compass to answer the following question.



Which line segment is congruent to \overline{AB} ?

- A \overline{CD}
- B \overline{CE}
- C \overline{CF}
- D \overline{CG}

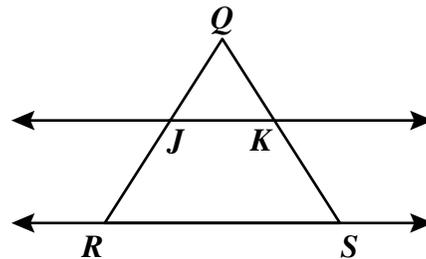
- 12



According to the Venn diagram, which is true?

- F All football players play offense or defense.
- G No football players play offense and defense.
- H All football players play defense.
- J Some football players play offense and defense.

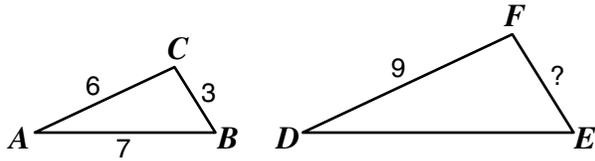
- 13



\overleftrightarrow{JK} and \overleftrightarrow{RS} are parallel. Which of the following statements is true?

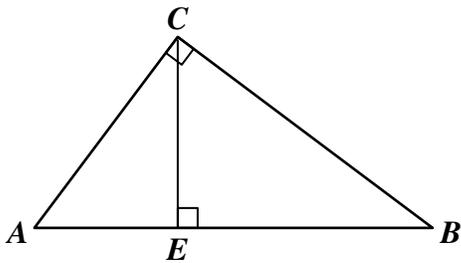
- A $\frac{JR}{QJ} = \frac{KS}{RS}$
- B $\frac{JK}{RS} = \frac{QK}{SK}$
- C $\frac{QR}{KS} = \frac{QS}{RJ}$
- D $\frac{QR}{QJ} = \frac{QS}{QK}$

- 14 Triangles ABC and DEF are similar and have measurements as shown.



What is the measure of \overline{EF} ?

- F $\frac{21}{2}$
- G $\frac{15}{2}$
- H $\frac{9}{2}$
- J $\frac{3}{2}$
- 15 Altitude \overline{CE} is drawn from right angle C of triangle ABC forming right triangles ACE and CBE .



Which statement concerning the 3 triangles is true?

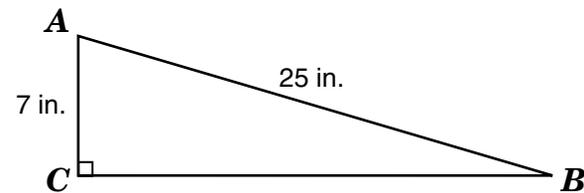
- A None of the triangles are similar.
- B Only triangles ACE and CBE are similar.
- C Triangle ABC is similar to only triangle ACE .
- D Triangle ABC is similar to both triangle ACE and triangle CBE .

- 16 Assuming these statements are true,

Some musicians are happy people.
All happy people like music.

which of the following is a valid conclusion?

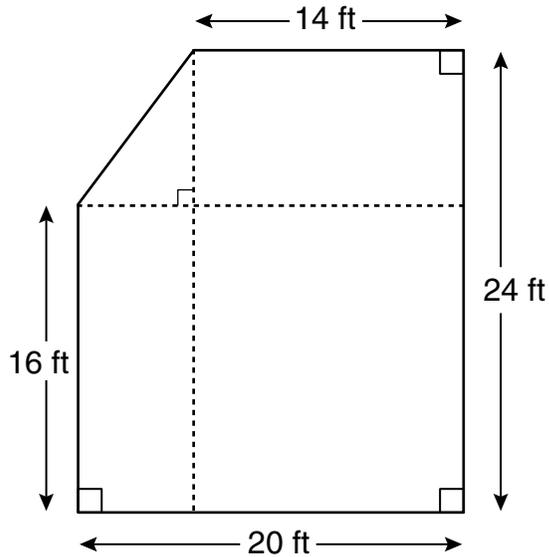
- F All happy people are musicians.
- G All musicians like music.
- H Some happy people do not like music.
- J Some musicians like music.
- 17 Triangle ABC is a right triangle with the measures shown.



The length of \overline{BC} is —

- A 18 in.
- B 24 in.
- C 32 in.
- D 576 in.

- 18 A customer provided this diagram of a patio to a fencing company.



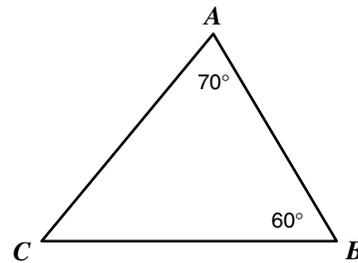
What is the length of the unlabeled side?

- F 10 ft
 G 11 ft
 H 12 ft
 J 13 ft
- 19 In triangle ABC , $AC = 6$, $AB = 7$, and $BC = 5$. Which is true?
- A The measure of $\angle C$ is the least of the three angles.
 B The measure of $\angle C$ is the greatest of the three angles.
 C The measure of $\angle B$ is the greatest of the three angles.
 D The measure of $\angle B$ is the least of the three angles.

- 20 In any $\triangle ABC$, which statement is always true?

- F $m\angle A + m\angle B = 90^\circ$
 G $m\angle A + m\angle B < 90^\circ$
 H $AB + BC > AC$
 J $AB + BC < AC$

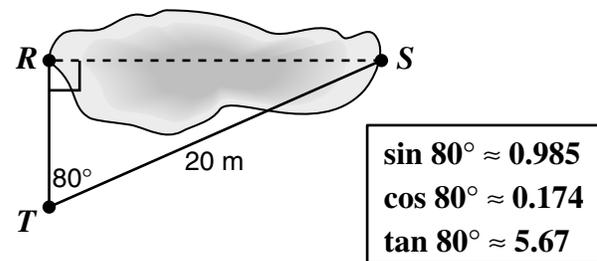
21



Which of the following lists the sides of $\triangle ABC$ from least to greatest length?

- A \overline{AC} , \overline{BC} , \overline{AB}
 B \overline{AC} , \overline{AB} , \overline{BC}
 C \overline{AB} , \overline{AC} , \overline{BC}
 D \overline{BC} , \overline{AC} , \overline{AB}

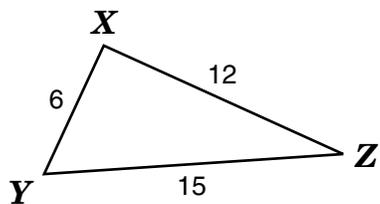
- 22 To determine the distance across a pond, Harry made the measurements shown in the diagram.



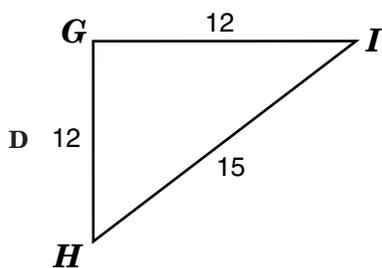
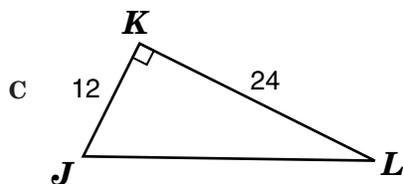
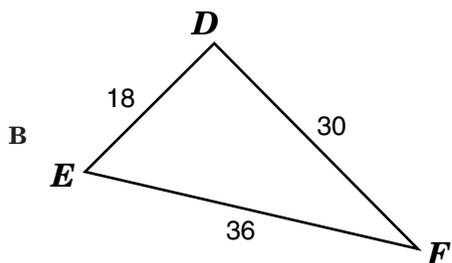
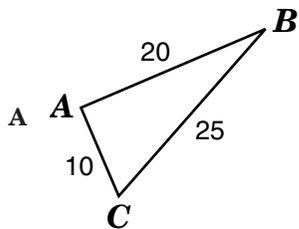
Which is *closest* to the distance from R to S?

- F 3.48 m
 G 19.7 m
 H 20.3 m
 J 113.4 m

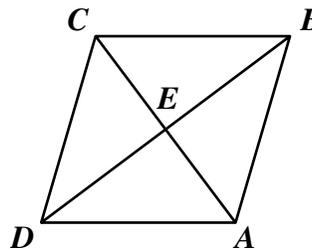
23



Which triangle is similar to $\triangle XYZ$?



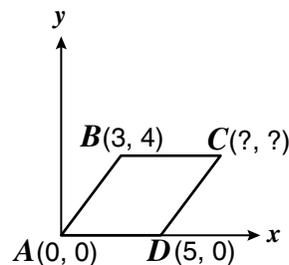
24 In rhombus $ABCD$, $AC = 30$ inches and $BD = 40$ inches.



What is the perimeter of the rhombus?

- F 25 in.
- G 50 in.
- H 100 in.
- J 200 in.

25 $ABCD$ is a rhombus.



What are the coordinates of vertex C ?

- A (5, 4)
- B (6, 4)
- C (8, 4)
- D (4, 3)

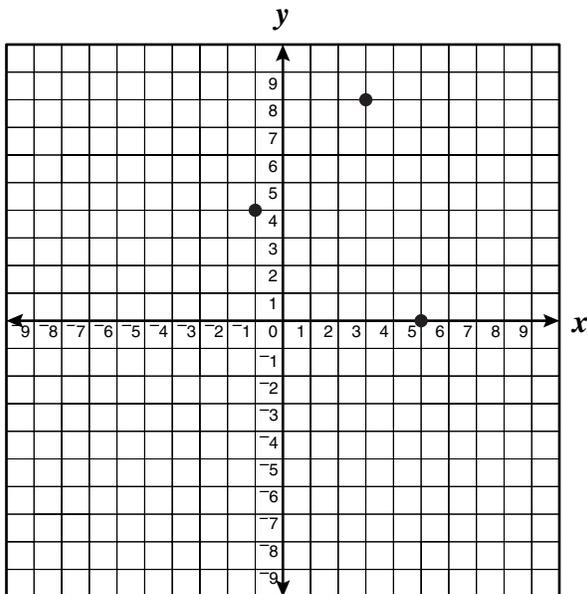
- 26 The quadrilateral $ABCD$ is a parallelogram.



Which of the following pieces of information would suffice to prove that $ABCD$ is a rectangle?

- F $AC = BD$
- G $AB = AD$
- H $m\angle B = m\angle D$
- J $\angle A$ and $\angle D$ are supplementary

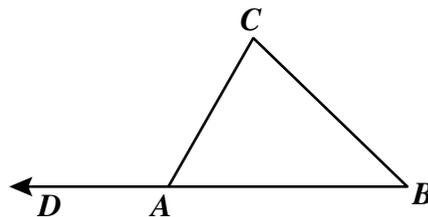
- 27 Three vertices of parallelogram $ABCD$ have coordinates $(-1, 4)$, $(3, 8)$, and $(5, 0)$.



What are the coordinates of the other first-quadrant vertex?

- A $(-3, 12)$
- B $(-1, 4)$
- C $(1, 4)$
- D $(9, 4)$

- 28 In the figure, the measure of $\angle CAD$ is twice the measure of $\angle CAB$.



What is the measure of $\angle CAB$?

- F 120°
- G 60°
- H 45°
- J 30°

- 29

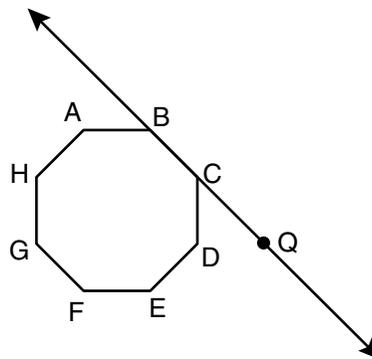
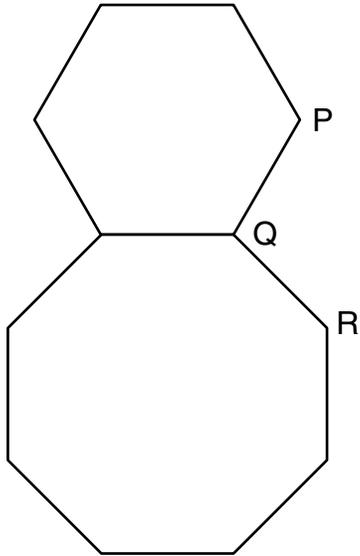


Figure $ABCDEFGH$ is a regular octagon. What is the measure of $\angle DCQ$?

- A 135°
- B 60°
- C 45°
- D 30°

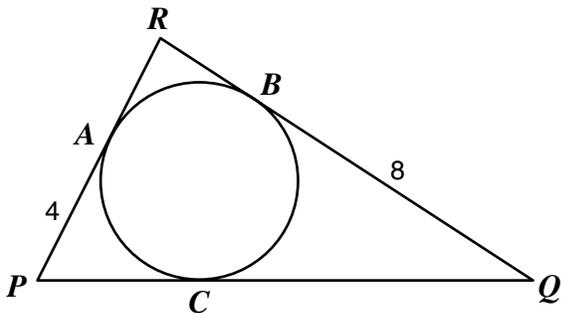
30



The two adjacent figures are a regular hexagon and a regular octagon. What is the measure of $\angle PQR$?

- F 87.5°
- G 90°
- H 105°
- J 120°

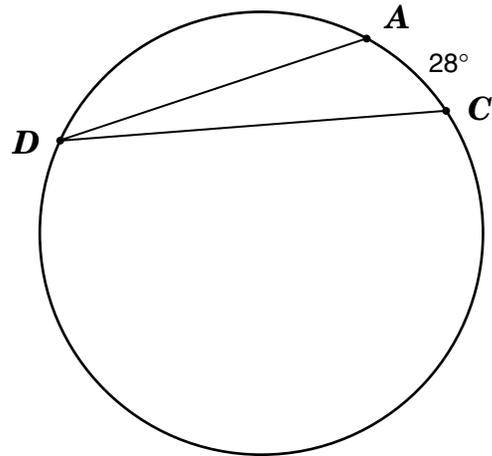
31



A , B , and C are points of tangency. $AP = 4$ and $BQ = 8$. What is the measure of \overline{PQ} ?

- A 4
- B 8
- C 12
- D $\sqrt{32}$

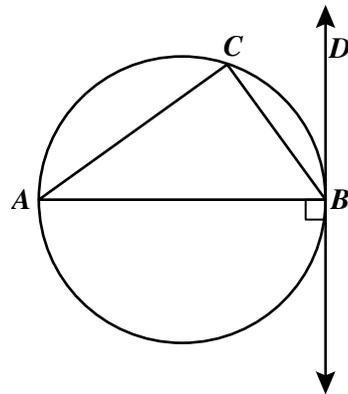
32 The measure of arc AC is 28° .



What is the measure of $\angle ADC$?

- F 7°
- G 14°
- H 28°
- J 56°

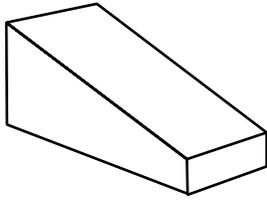
33 \overleftrightarrow{BD} is tangent to the circle at B and the measure of \widehat{AC} is 108° .



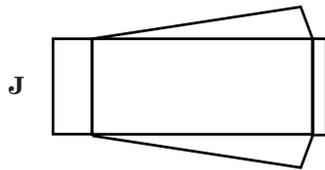
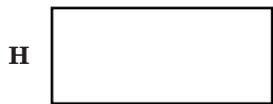
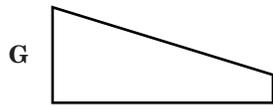
What is the measure of $\angle CBD$?

- A 118°
- B 72°
- C 36°
- D 18°

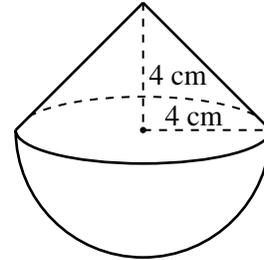
34



Which is a two-dimensional representation of the view from directly above the figure?



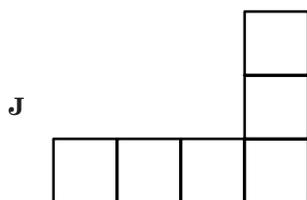
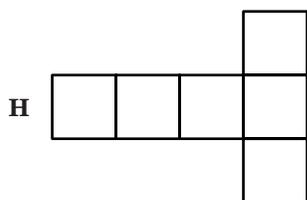
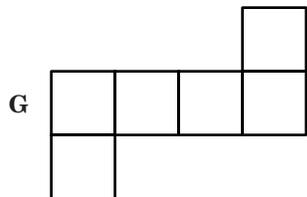
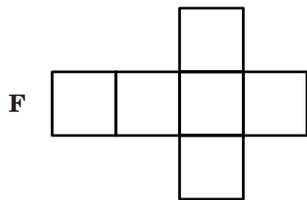
35 The figure shows a right circular cone on top of a hemisphere with the same radius.



To the nearest whole number, what is the volume of this solid?

- A 201 cm^3
- B 256 cm^3
- C 278 cm^3
- D 309 cm^3

- 36 Which of the following patterns could *not* be folded into a cube?



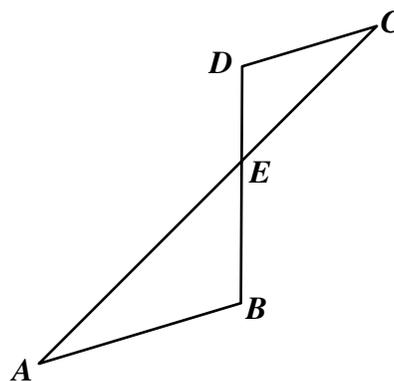
- 37 A cylindrical water container is 1.2 meters high and has a diameter of 4.6 meters. Approximately how many cubic meters of water will the container hold when it is *half full*?

- A 4.33
- B 9.97
- C 29.93
- D 39.87

- 38 What is the volume of a right square pyramid with a height of 3 centimeters and a base that measures 8 centimeters by 8 centimeters?

- F 64 cm^3
- G 72 cm^3
- H 144 cm^3
- J 225 cm^3

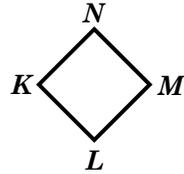
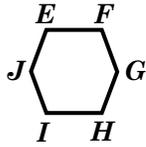
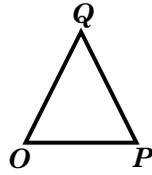
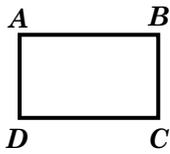
- 39 Line segments AC and BD intersect at E , as shown in the figure. $\overline{AB} \parallel \overline{CD}$, $DE = 10$, $BE = 15$, and $CE = 20$.



What is the measure of \overline{AE} ?

- A 13
- B 17
- C 25
- D 30

40



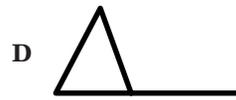
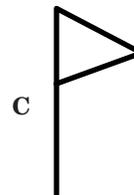
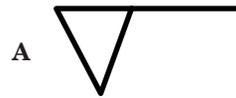
Which polygon shown above has only one line of symmetry?

- F Rectangle $ABCD$
- G Hexagon $EFGHIJ$
- H Square $KLMN$
- J Triangle OPQ

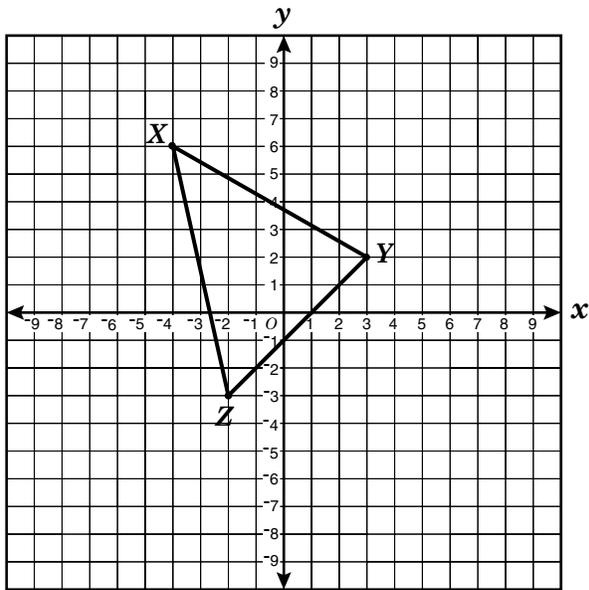
41 Consider this figure.



Which of the following is a rotation in the plane of the given figure?



42



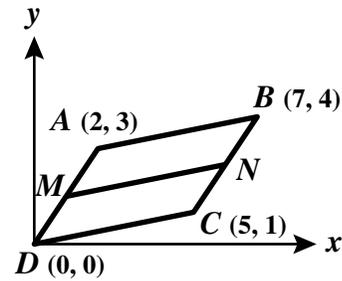
If triangle XYZ is reflected across the y -axis to form triangle $X'Y'Z'$, what is the coordinate of Y' ?

- F $(-3, 2)$
- G $(4, 6)$
- H $(2, -3)$
- J $(3, -2)$

43 Which point is the greatest distance from the origin?

- A $(-8, -5)$
- B $(-9, 1)$
- C $(3, 4)$
- D $(9, 2)$

44



Parallelogram $ABCD$ is positioned on a coordinate plane with the coordinates as shown. N is the midpoint of \overline{BC} . What are the coordinates of N ?

- F $(2, 3)$
- G $(3.5, 2)$
- H $(2.5, 6)$
- J $(6, 2.5)$

45 The slope of the line joining the coordinate points $(3, -1)$ and $(-4, 7)$ is —

- A $\frac{-8}{7}$
- B $\frac{-7}{8}$
- C $\frac{-6}{7}$
- D $\frac{-1}{8}$

Answer Key

Test Sequence	Correct Answer	Reporting Category	Reporting Category Description
1	A	001	Lines and Angles
2	G	001	Lines and Angles
3	A	001	Lines and Angles
4	G	001	Lines and Angles
5	C	001	Lines and Angles
6	G	001	Lines and Angles
7	D	001	Lines and Angles
8	H	001	Lines and Angles
9	B	001	Lines and Angles
10	H	001	Lines and Angles
11	B	001	Lines and Angles
12	J	002	Triangles and Logic
13	D	002	Triangles and Logic
14	H	002	Triangles and Logic
15	D	002	Triangles and Logic
16	J	002	Triangles and Logic
17	B	002	Triangles and Logic
18	F	002	Triangles and Logic
19	B	002	Triangles and Logic
20	H	002	Triangles and Logic
21	C	002	Triangles and Logic
22	G	002	Triangles and Logic
23	A	002	Triangles and Logic
24	H	003	Polygons and Circles
25	C	003	Polygons and Circles
26	F	003	Polygons and Circles
27	D	003	Polygons and Circles
28	G	003	Polygons and Circles
29	C	003	Polygons and Circles
30	H	003	Polygons and Circles
31	C	003	Polygons and Circles
32	G	003	Polygons and Circles
33	C	003	Polygons and Circles
34	H	004	Three-Dimensional Figures
35	A	004	Three-Dimensional Figures
36	J	004	Three-Dimensional Figures
37	B	004	Three-Dimensional Figures
38	F	004	Three-Dimensional Figures
39	D	004	Three-Dimensional Figures
40	J	005	Coordinate Relations, Transformations, and Vectors
41	A	005	Coordinate Relations, Transformations, and Vectors
42	F	005	Coordinate Relations, Transformations, and Vectors
43	A	005	Coordinate Relations, Transformations, and Vectors
44	J	005	Coordinate Relations, Transformations, and Vectors
45	A	005	Coordinate Relations, Transformations, and Vectors